8042
Ser 5120D/03044/bts
06 Jan 04

MEMORANDUM

From: 5120D
To: 4230

Subj: REQUEST FOR DISTRIBUTION OF DOCUMENT

Encl: (1) ECP #03044-5120

1. We held a Configuration Management Board on 12 December 2003 and approved one (1) ECP for the CKU-5B/A ROCAT Program. The subject Drawing was updated & converted to Pro-Engineer by Code 510 personnel, and was approved by Code 510 on 06 January 2004.

2. Please use enclosure (1) to update your records on this document (512-174-0079A) and to distribute it.

3. Use CON 4KER083 for this task.

4. Call B.T. Smaldone on X2119, if you have any questions or comments.

B. T. SMALDONE

Copy to:
510CM
5120
5120A
5120B
5130J

ENGINEERING CHANGE PROPOSAL (ECP), PAGE 1

1. DATE (YYMMDD)	FORM APPROVED
031118	OMB No. 0704-0188

2. PROCURING ACTIVITY NO.	3. DODAAC
N00174	N00174

4. ORIGINATOR	b. ADDRESS (Street, City, State, Zip Code)	5. CLASS OF ECP	
a. TYPED NAME (First, Middle Initial, Last) **Glenn Campbell** **5120, 301-744-2115**	**Commander** **IHDIVNAVSURFWARCEN** **Indian Head, MD 20640-5035**	**II**	
		6. JUST. CODE **D**	7. PRIORITY **R**

8. ECP DESIGNATION			9. BASELINE AFFECTED
a. MODEL/TYPE **CKU-5B/A**	b. CAGE CODE **14083**	c. SYSTEM DESIGNATION **Rocket Catapult**	[ ] FUNCTIONAL [XXX] PRODUCT [ ] ALLOCATED
d. ECP NO. **03044-5120**	e. TYPE **F**	f. REV **NR**	10. OTHER SYS./CONFIG. ITEMS AFFECTED [ ] YES [XXX] NO

11. SPECIFICATIONS AFFECTED					12. DRAWINGS AFFECTED			
	CAGE Code	Specification/Document No.	Rev	SCN	CAGE Code	Number	Rev	NOR
a. SYSTEM					**14083**	**512-174-0079**	**N/R**	
b. DEVELOPMENT								
c. PRODUCT								

13. TITLE OF CHANGE
CKU-5B Metering Tube, Change Material and Manufacturing Method

14. CONTRACT NO. AND LINE ITEM	15. PROCURING CONTRACTING OFFICER	
N/A	a. NAME (First, Middle Initial, Last)	
	b. CODE	TELEPHONE NO.

16. CONFIGURATION ITEM NOMENCLATURE	17. IN PRODUCTION
CKU-5B/A	[ ] YES [XXX] NO

18. ALL LOWER LEVEL ITEMS AFFECTED

a. NOMENCLATURE	b. PART NO.	c. NSN
TUBE, METERING	**512-174-0079 N/R**	**N/A**

19. DESCRIPTION OF CHANGE

PLEASE SEE ATTACHED SHEETS

20. NEED FOR CHANGE

PLEASE SEE ATTACHED SHEETS

21. PRODUCTION EFFECTIVITY BY SERIAL NUMBER	22. EFFECT ON PRODUCTION DELIVERY SCHEDULE
N/A	**NONE**

23. RETROFIT

a. RECOMMENDED ITEM EFFECTIVITY	b. SHIP/VEHICLE CLASS AFFECTED
N/A	**N/A**
c. ESTIMATED KIT DELIVERY SCHEDULE	d. LOCATIONS OR SHIP/VEHICLE NUMBERS AFFECTED
N/A	**N/A**
24. ESTIMATED COSTS/SAVINGS UNDER CONTRACT	25. ESTIMATED NET TOTAL COSTS/SAVINGS
N/A	**N/A**
26. SUBMITTING ACTIVITY a. AUTHORIZED SIGNATURE **Glenn Campbell** Glenn Campbell 11/19/2003	b. TITLE **Manager, PAD Branch**

27. APPROVAL/DISAPPROVAL

a. CLASS I		b. CLASS II		c. CLASS II	
[ ] APPROVAL RECOMMENDED	[ ] DISAPPROVAL RECOMMENDED	[ ] APPROVED	[ ] DISAPPROVED	[ ] CONCUR IN CLASSIFICATION OF CHANG	[ ] DO NOT CONCUR CLASSIFICATION OF CHANGE

d. GOVERNMENT ACTIVITY	e. SIGNATURE	f. DATE SIGNED (YYMMDD)
g. APPROVAL [X] APPROVED [ ] DISAPPROVED	h. GOVERNMENT ACTIVITY **Indian Head Division** **Naval Surface Warfare Center**	i. SIGNATURE Craig A. Pfleeger **Craig A. Pfleeger**	j. DATE SIGNED (YYMMDD) 03-12-12

DD FORM 1692, APR 92 Previous editions are obsolete

ECP 03044-5120
CKU-5B Metering Tube, Change Material and Manufacturing Method
512-174-0079 N/R

Blk.19. DESCRIPTION OF CHANGE

1. Delete text of existing Delta Note 2, and replace with the following:
"2. MATERIAL: STEEL CORROSION-RESISTANT, BAR, FREE MACHINING, 18Cr-9.0Ni, TYPES 1, 2, OR 3 IN ACCORDANCE WITH SAE AMS 5640T."

2. Delete text of existing Delta Note 6, and replace with the following:
"6. DIMENSION TO DRILL POINT. GUN DRILL OR CONVENTIONAL DRILL POINT ALLOWED."

3. Delete text of existing Note 8, and replace with the following:
"8. AFTER MACHINING, CLEAN AND PASSIVATE PARTS IN ACCORDANCE WITH ASTM A 380-99 OR SAE AMS-QQ-P-35 TYPE II."

4. Delete existing Note 10 in its entirety. Add the text of Note 10 as the second sentence of existing Note 7. In zone B-7, change **"Delta 10"** to **"Delta 7".**

5. In zone A-6, delete weld symbol and **"Delta 6."**

6. In zone A-6 to A-2, add **"6.950/6.900"** with **"Delta 6"** depth to drill point dimension Modify the drawing accordingly to reflect the dimensional change and the drill point at bottom of bore.

7. In zone C-7 to C-2, add **"7.150 Minimum"** overall length dimension.

8. In Note 9, first line, change **"AFTER PRESSURE TEST"** to **"AFTER PASSIVATION,".**

Blk.20. NEED FOR CHANGE

Background: The current Metering Tube meets drawing 512-174-0079NR approved 8/11/03. This Metering Tube is manufactured from type 321 stainless steel tubing and includes a swaged and welded tip to close off one end of the tube and provide a smooth rounded tip to prevent cutting of o-rings contained in the mating part. There has been some difficulty getting a reasonable selection of vendors to quote this part due to the welded tip construction. This ECP establishes an alternate version of the Metering Tube that can be machined from solid bar stock. When approved, this configuration can be used in addition to the welded configuration meeting drawing 512-174-0079 N/R approved 8/11/03.

1. The current material , SAE 30321 alloy, is supplied primarily in tube form. The new material specified has adequate mechanical properties, is free machining, and is available in bar form. Please see attached table for comparative material properties.

2/5/6/7. The current note 6 describes the type of weld and weld requirements. This is no longer needed since the part is being machined from solid. The M103 now applies to the new note that describes the fact that we are allowing a drill point in the bottom of the internal bore as opposed to requiring a flat bottom hole which would require an extra machining operation. The weld symbol is no longer needed. Section A-A needs to be updated to reflect the new configuration, with the depth of the gun drilled bore specified. The overall length is needed to control the minimum length of the spherical radius tip of the tube.

3/8. The 2000 psig pressure test is no longer needed since the part is being machined from solid. The new passivation requirement replaces the pressure test callout and the M105 now applies to the passivation requirement.

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CKU-5B Metering Tube, Change Material and Manufacturing Method
512-174-0079 N/R

CKU 5 ROCAT METERING TUBE MATERIAL COMPARISONS

MATERIAL/ SPECIFICATION	UTS (KPSI)	TS (KPSI)	ELONGATION IN 2 INCHES (%)
ORIGINAL MATERIAL 4130 MIL-T-6736 COND N	95	75	12
WELDED CONFIGURATION 321 SS PER SAE-AMS 5557J TYPE 1 UNS S32100	70	30	40
NEW ONE PIECE GUN DRILL 301 SS PER SAE-AMS 5640T			
UNS S30300 TYPE 1	85	35	50
UNS S30323 TYPE2	85	35	50
UNS S30310 TYPE 3	NA	NA	NA

ATTACHMENT 1

CLASSIFICATION OF CHARACTERISTICS (DOD-STD-2101)	
CRITICAL-	NONE
MAJOR-	8
MINOR-	ALL OTHER CHARACTERISTICS

REVISIONS			
REV	DESCRIPTION	DATE	APPROVAL

CAD MAINTAINED, CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH ASME Y14.5M-1994 AND ASME Y14.100-2000 WITH APPENDICES B, C, D, AND E.

(M101) ⚠2 MATERIAL: STEEL, CORROSION AND HEAT RESISTANT, SEAMLESS HYDRAULIC TUBING IN ACCORDANCE WITH SAE AMS 5557J, TYPE 1.

3. UNLESS OTHERWISE SPECIFIED, SURFACE ROUGHNESS MUST BE 63 OR BETTER.

(M102) ⚠4 BREAK ALL SHARP EDGES ON OUTSIDE DIAMETER OF TUBE.

5. UNLESS OTHERWISE SPECIFIED, REMOVE BURRS, BREAK SHARP EDGES .005-.020, FILLETS .020 MAX.

(M103) ⚠6 PLUG WELD TUBE USING A GAS TUNGSTEN ARC WELD MEETING THE REQUIREMENTS OF AWS D17.1-2001. USE TYPE ER347 FILLER MATERIAL MEETING ANSI/AWS A5.9-93. RADIOGRAPHIC AND LIQUID PENETRANT INSPECTIONS ARE NOT REQUIRED. BACK SHIELD THE INTERIOR OF THE TUBE WITH INERT GAS DURING WELDING. MACHINE AND BLEND PLUG WELD TO THE APPROXIMATE RADIUS SHOWN.

(M104) ⚠1 NO SHARP EDGE ON TRANSITION FROM 30° CONE TO .246/.249 DIAMETER AND FROM 30° CONE TO SPHERICAL RADIUS.

(M105) 8. VERIFY WELD INTEGRITY BY APPLYING 2000 ±150 PSIG DRY NITROGEN GAS FOR 15 SECONDS USING A VENDOR SUPPLIED FIXTURE. TEST ALL INTERIOR SURFACES INCLUDING THE PLUG WELDED TIP. SUBMERGE THE TUBE IN WATER TO DETECT LEAKAGE IN AND AROUND THE WELDED AREA. REJECT ANY ASSEMBLIES EXHIBITING LEAKAGE IN AND AROUND THE WELD AREA.

9. AFTER PRESSURE TEST, CONDUCT FLOW TEST BY APPLYING DRY SHOP AIR TO THE INSIDE OF THE TUBE TO VERIFY FREE FLOW THROUGH THE EIGHT .031 INCH DIAMETER HOLES.

(X01) SPHERICAL RADIUS AND 30° CONICAL FEATURE SHALL MEET TANGENTIALLY.

#1 REPLACE: MATERIAL: STEEL CORROSION-RESISTANT, BAR, FREE MACHINING, 18Cr-9.0Ni, TYPES 1, 2, OR 3 IN ACCORDANCE WITH SAE AMS 5640T.

#2 REPLACE: DIMENSION TO DRILL POINT. GUN DRILL OR CONVENTIONAL DRILL POINT ALLOWED.

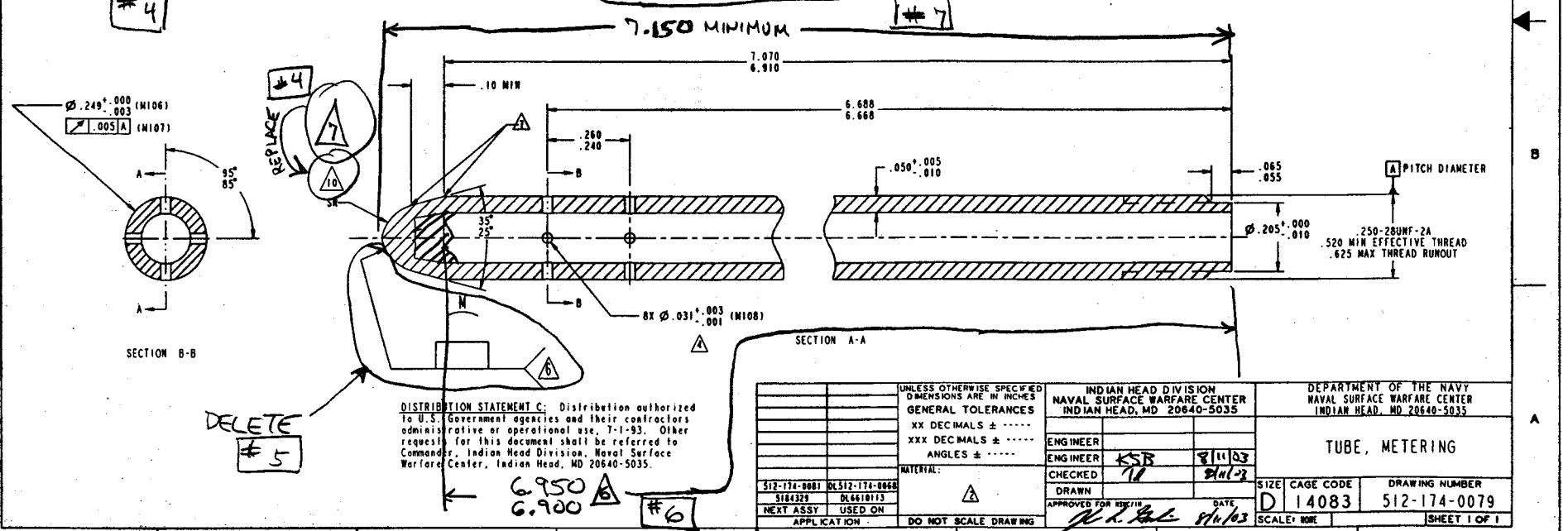
#3 REPLACE: AFTER MACHINING, CLEAN AND PASSIVATE PARTS IN ACCORDANCE WITH ASTM A 380-99 OR SAE AMS-QQ-P-35 TYPE II.

ECP 03044-5120

MOVE #8 REPLACE: AFTER PASSIVATION

#4

#7



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512-174-0081	DL512-174-0068
5184329	DL6610113
NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
GENERAL TOLERANCES
XX DECIMALS ± .....
XXX DECIMALS ± .....
ANGLES ± .....
MATERIAL: ⚠2
DO NOT SCALE DRAWING

INDIAN HEAD DIVISION
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MD 20640-5035

ENGINEER		
ENGINEER	KSR	8/11/03
CHECKED	TH	8/14/03
DRAWN		
APPROVED FOR RELEASE		DATE 8/14/03

DEPARTMENT OF THE NAVY
NAVAL SURFACE WARFARE CENTER
INDIAN HEAD, MD 20640-5035

TUBE, METERING

SIZE	CAGE CODE	DRAWING NUMBER
D	14083	512-174-0079

SCALE: NONE SHEET 1 OF 1

ECP 03044-5120
CKU-5B Metering Tube, Change Material and Manufacturing Method
512-174-0079 N/R

COMMENTS AND RESOLUTIONS

510 - No comments

5120D - Ok for CM

5110 - What test is going to be used or is there any data that confirms that the new metering tube is acceptable machined from barstock versus the welded version?
5120 Response - We will add the drilled version on-hand to the next ballistic test that comes up. Which should be in 2 - 3 weeks(?)

5120 - NA

5120A Comments - Block 20, item 1: What are adequate mechanical properties? I'd show a comparison table of mechanical properties and element composition between the old and new stainless steels. I would not approve this without some ballistic testing to verify there are no problems with the change
5120 Response - We will add the drilled version on-hand to the next ballistic test that comes up. Which should be in 2 - 3 weeks(?)
5120D Response - Attached table or comparative material properties.

5120B - Totally agree with changes

5130 - Accepting this ECP will result in eliminating the present manufacturing method. Although it is tough to get, it is still an acceptable part. I recommend that the ECP present both methods. This will probably require addition of a second sheet to properly depict the different methods.
5120 Response - The present manufacturing method will be available - if we want it to be - on the NR drawing. That could not happen unless we specifically allow the use of the NR drawing on a KT or work order, which is how we want it. So that's the second sheet we want - the NR version of the drawing.

5130L Comment - nice job on the ecp, make sure that when the part is re-drawn to reflect the new gun drill point in the bottom of the bore that it is drawn with the "W" point as I placed on the sketch. that is what the drill point from a gun drill actually looks like.

2220 - No comments

4230 - No comments

DIV. 510 ECP ROUTING SHEET - DRAWING REVIEW/REVISION

ECP Number: 03044-5120
Title: CKU-5B Metering Tube, Change Material and Manufacturing Method
Program: CKU-5B/A
Drawing: 512-174-0079 N/R to A
Originator: 5120

STEP/REVIEWER	CODE	INITIALS	DATE
Review Approved ECP & Marked -Up Drawing Originator	5120D	BTS	12/16/03
Assign Conversion to Pro-E User/Check File out of Intralink Ed Wojtkowski	5110N	EW	12/16/03
Prepare Drawing per ECP Pro- E User	5130M		12/17/03
Review Changed Drawing Originator	5120B		1/6/04
Review Changed Drawing Additional Reviewer	5120G	KSB	12/18/03
510 CM Review	5120D	BTS	1/6/04
Approve Changed Drawing Craig Pfleegor	510		1/6/04
510 CM Process Drawing & ECP	5120D	BTS	1/6/04
Update Dwg Sig. Block in Pro-E/Check File into Intralink/Create .pdf file and forward to 510CM. Ed Wojtkowski	5130M 5110N		1/6/04

510 CMB Members as of 11/19/03

			this ECP
Chairperson:	510 Craig A. Pfleegor (AEPS/PAD Engineering Division Director)	510	X
Vice Chair:	5120D Bruce T. Smaldone (Configuration Manager)	5120D	X
Member:	5110 Diane Sabal (AEPS Branch Manager)	5110	X
Member:	5120 Glenn C. Campbell (PAD Branch Manager)	5120	X
Member:	5130 John Goodwin (Development Branch Manager)	5130	X
Member:	5120A Tom Ilkka (Technical Specialist)	5120A	X
Member:	5130L Peter A. Margiotta (510 Materials Rep.) *	5130L	X
Member:	2110 Angelo Brown (Rkt. Mtr. Eng. Branch Manager) *	2110	
Member:	2220 Cindy Yeager (CAD/AEPS Eng. Branch Manager) *	2220	X
Member:	2240 Eric Lawrence (Cartridge Engineering Branch Manager) *	2240	
Member:	4230B Vicki Daniels (Data Review Branch Rep./Drawings) **	4230B	X
Member:	4230F Lloyd Penn (Standardization Branch Rep/Specs) **	4230F	

NOTES:
* As appropriate to program/ECP
** One rep. As appropriate